

# **EXHIBIT F**

Costas J. Spanos, Ph.D.

IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION

Ocean Semiconductor LLC, )  
 )  
Plaintiff )  
 )  
v. )  
 )  
MediaTek Inc. and MediaTek )  
USA Inc. ("MediaTek"), )  
 )  
Defendants.)  
\_\_\_\_\_)  
 )  
AND RELATED ACTIONS. )  
\_\_\_\_\_)

REPORTER CERTIFIED  
TRANSCRIPT

No. 6:20-cv-1210-ADA

VIDEOCONFERENCE DEPOSITION OF  
COSTAS J. SPANOS, PH.D.

WEDNESDAY, OCTOBER 20, 2021, 12:11 P.M. PT

STENOGRAPHICALLY REPORTED BY:  
CHERYL M. HAAB, RPR, CCRR, CLR  
CA CSR NO. 13600  
WA CSR NO. 3499  
FILE NO. 42305



1 BY MR. CHAN:

2 Q That's fine.

3 The specification does not mention noble gas;  
4 correct?

5 A Not that I recall.

6 Q Now, your definition says "air or other gas,"  
7 but it doesn't say that it is limited to inert gas;  
8 correct?

9 A Yes.

10 Q So it could be construed broadly to include  
11 noble gas; correct?

12 MR. BOWEN: Objection. Speculation. Calls for  
13 a legal conclusion.

14 You can answer.

15 THE WITNESS: It could.

16 BY MR. CHAN:

17 Q Dr. Spanos?

18 A Yes. It could.

19 Q Okay. Also, air is not gas; am I right?

20 A Air is not gas? Well, it's not a single gas.  
21 It's a mixture of various gases, yes.

22 Q Okay. If the pneumatic cylinder were to be  
23 defined as only a gas cylinder, is that a correct  
24 construction?

25 A You mean by that, excluding the possibility of

1 operating a pneumatic cylinder with air?

2 Q That's right, as only a gas cylinder.

3 Do you agree with that construction?

4 A I do not. As an engineer, I think a pneumatic  
5 cylinder, depending on the circumstances of  
6 applications, can very nicely operate on air as well.

7 Q Thank you.

8 Conversely, if a pneumatic cylinder were to be  
9 defined as only an air cylinder, is that a correct  
10 construction?

11 A It is not.

12 Q Dr. Spanos, I recall the specification  
13 describes the pneumatic cylinder as having a shaft 49.

14 Do you remember that?

15 A Shaft 49? Yes. Are you referring to figure 2,  
16 I presume? Yes.

17 Q That's right.

18 A Yes, I do.

19 Q What does a shaft mean to you?

20 A Shaft is a -- is a mechanical element. It's  
21 usually a rod that is used to transfer motion.

22 (Reporter clarification.)

23 THE WITNESS: Yes. Sometimes, this motion is  
24 rotational. Sometimes this motion is linear. In this  
25 case, I think we're referring to the latter, to linear

1 motion.

2 BY MR. CHAN:

3 Q In your opinion, is a shaft the same as a rod?

4 A No. The two words do not mean the same. But a  
5 shaft is usually a rod, but a rod is not always a shaft.

6 Q What does a rod mean to you, then?

7 A A rod is generally used to describe a shape  
8 which is usually an item that has some length and some  
9 diameter. And that's how people would describe it.

10 Q Is a piston a shaft?

11 A Not necessarily.

12 Q Is a piston a rod?

13 A I don't think engineers will describe it as  
14 such.

15 Q Can I direct your attention back to Exhibit 22.

16 A Okay.

17 Q Let me know when you're there.

18 A On page 87.

19 Q Let me know when you're there.

20 A Okay.

21 Q In figure 5.1(b), do you see the piston rod  
22 labeled as referenced in numeral 11?

23 A Okay. Yes, I do.

24 Q And that rod has three portions. The middle  
25 portion is the expanded portion with a wider diameter,

1 something to mean other than hydraulic, electromagnetic,  
2 or pneumatic. So this is the context I'm referring to.

3 Q Do you see the word "comprised of" in that  
4 sentence you just read?

5 A I do.

6 Q What does that mean to you?

7 MR. BOWEN: Objection. Calls for a legal  
8 conclusion.

9 THE WITNESS: It means "made of."

10 BY MR. CHAN:

11 Q It means "made of"?

12 A Uh-huh. In combination for any of these parts.

13 Q Does your definition of "made of" include  
14 multiple of those mechanisms?

15 MR. BOWEN: Objection. Asked and answered.

16 THE WITNESS: Yes, it does.

17 BY MR. CHAN:

18 Q Okay. Mr. Spanos, I think we talked about the  
19 shaft 49 and the valve 61.

20 Those are mechanical parts; right?

21 A Yeah. People would describe them as  
22 mechanical, correct.

23 Q So those mechanical parts -- excuse me.

24 Those mechanical parts are used by pneumatic  
25 cylinders; correct?

1 A Sure. Cylinders are made of parts and people  
2 could call those mechanical parts.

3 Q And are you aware that mechanical parts such as  
4 the shaft 49 are used in hydraulic applications?

5 A Yes.

6 MR. BOWEN: Objection. Scope.

7 BY MR. CHAN:

8 Q I'm sorry. Can you repeat the answer again,  
9 Dr. Spanos?

10 A Yes. They can be used in hydraulic  
11 applications.

12 Q And are you aware that mechanical parts such as  
13 the shaft 49, again, are used in electromagnetic  
14 applications?

15 MR. BOWEN: Objection. Scope.

16 THE WITNESS: Yes. They could be used, even  
17 though 49 -- the way figure 2 -- the way it's drawn  
18 doesn't show how. But yes, in general, they could.

19 BY MR. CHAN:

20 Q In opining on the construction of the term  
21 "pneumatic cylinder," did you consider that hybrid  
22 pneumatic mechanical cylinders were readily available at  
23 the time of your invention?

24 MR. BOWEN: Objection. Vague.

25 THE WITNESS: Yes.

1 MR. BOWEN: Go ahead.

2 THE WITNESS: Could you please repeat the  
3 question.

4 BY MR. CHAN:

5 Q Sure.

6 In opining on the construction of pneumatic  
7 cylinder, did you consider that hybrid pneumatic  
8 mechanical cylinders were readily available at the time  
9 of the invention?

10 MR. BOWEN: Objection.

11 THE WITNESS: Yes, I was aware of that.

12 THE COURT REPORTER: What's the objection?

13 MR. BOWEN: Vague.

14 BY MR. CHAN:

15 Q What are hydraulic cylinders?

16 A Hydraulic cylinders are devices that use  
17 compressed liquid, liquid under some pressure, in order  
18 to generate some kind of action, motion, typically.

19 Q So it is different than pneumatic cylinder in  
20 that it uses liquid instead of air or gas?

21 A Primarily, yes. That's the main difference.

22 Q Could I turn your attention to column 8,  
23 line 48.

24 A Yes.

25 Q Now, the inventor describes pneumatic cylinders



1 in both the drawings and specification as, I believe,  
2 pneumatic cylinder 46. It reads:

3 "As another example, the pneumatic cylinder 46  
4 may be provided with sensors to detect the  
5 travel of the rod 49 of the cylinder 46."

6 Do you see that?

7 A I do.

8 Q And it continues and reads:

9 "Initially, the controller 74 may position the  
10 surface 42 at an approximately horizontal  
11 position with the travel rack 82 and/or rod 49  
12 of the hydraulic cylinders 46 located at the  
13 approximate middle of their overall travel  
14 length."

15 Do you see that?

16 A I do see that.

17 Q Now, the inventor used that same numerical  
18 label 46 to describe hydraulic cylinders and pneumatic  
19 cylinders; right?

20 MR. BOWEN: Objection. Misrepresents the  
21 document.

22 THE WITNESS: I see they refer to line 50,  
23 cylinder -- I'm sorry -- the pneumatic cylinder 46 is  
24 referred to in line 48 and 49. And then the same  
25 numerical element 46 is used with the term "hydraulic

1 cylinder" near the bottom of this paragraph. I do see  
2 that, yes.

3 BY MR. CHAN:

4 Q Have you considered why the inventor used that  
5 same numerical label to describe both hydraulic  
6 cylinders and pneumatic cylinders?

7 MR. BOWEN: Objection. Misstates the document.

8 THE WITNESS: I have.

9 BY MR. CHAN:

10 Q And what is your conclusion?

11 A I think it's probably a mistake in the way this  
12 part of the specification is written.

13 Q Did you consider that the inventor intended  
14 that "pneumatic cylinder" and "hydraulic cylinder" be  
15 interchangeable?

16 MR. BOWEN: Objection. Objection. Misstates  
17 the document.

18 THE WITNESS: The document does not say that  
19 they're interchangeable. If they intended to say that,  
20 they would have said so explicitly.

21 BY MR. CHAN:

22 Q Are you aware that there were hybrid cylinders  
23 that combined pneumatic and hydraulic functions at the  
24 time of the invention?

25 A Yes.

1 number, but it requires a little bit longer explanation  
2 of what it actually means. And I'll be glad to go into  
3 that explanation. But it relates to the type one and  
4 type two errors in some hypothesis testing. So this  
5 item is a bit esoteric. I'll be glad to talk about it  
6 if you want.

7 Q Okay. That's okay.

8 Dr. Spanos, are you aware that you used the  
9 term "significant" or "significantly" or "insignificant"  
10 more than 18 times in this article?

11 A That's quite likely, yes.

12 Q And do you have any reason to dispute that this  
13 term "significant" or "significantly" or  
14 "insignificance" as used by you are not clear as to the  
15 meaning?

16 A No. I disagree with that. This paper is  
17 placed in a statistical experimental context. It is --  
18 it says so in the abstract. It says so in the footnote  
19 that you pointed me to. So it was very reasonable for  
20 the readers to infer that I'm using the term in its  
21 formal sense -- in its formal, quantifiable sense, and  
22 the audience -- it's meant for that. The forum where  
23 the paper was presented was meant for that. So no, I  
24 think the term is very clear.

25 MR. CHAN: Thank you.

1 abnormalities or the fault indications point to that  
2 definition. But that definition is missing.

3 BY MR. CHAN:

4 Q Dr. Spanos, for a skilled engineer, would there  
5 be any issue with respect to identifying whether a fault  
6 is an actual fault or a false positive?

7 A A skilled engineer -- given enough context and  
8 enough information, and given a specific processes to  
9 define things, deciding what kind of hypothesis test I  
10 need to do, they may be able to classify the fault. But  
11 the faults in semiconductor manufacturing do not simply  
12 fall in the category of significant or insignificant.  
13 It's much more nuanced than that. So that is my whole  
14 problem with the definition.

15 Q I understand. But my question is a little  
16 different.

17 My question is, for a skilled engineer, will  
18 there be any issue in terms of identifying whether  
19 there's an actual fault or a false positive?

20 A In a very narrow context with enough  
21 information known, I think skilled engineers could do  
22 that.

23 Q For a skilled engineer, would there be any  
24 issue with respect to identifying whether a fault is an  
25 actual fault or a false negative?

1 then I should not look for extrinsic evidence? If that  
2 patent informs me completely, yes. The question is that  
3 this one does not.

4 BY MR. PARKER:

5 Q What is your understanding of the doctrine of  
6 claim differentiation?

7 MR. BOWEN: Objection. Calls for legal  
8 analysis.

9 THE WITNESS: My general understanding, not  
10 having legal training, is that its claim has to add  
11 something that other claims do not have. They have to  
12 be different. They have to be covering different  
13 things.

14 BY MR. PARKER:

15 Q Is it your understanding that the doctrine  
16 should always be followed when construing claims?

17 A I do not know the legal answer to that. My  
18 common sense understanding is yes, it should be.

19 MR. PARKER: I don't have any further  
20 questions.

21 MR. BOWEN: I think we should take a break.

22 THE COURT REPORTER: Off the record?

23 (Recess.)

24 MR. BOWEN: So the defendants don't have any  
25 questions for Dr. Spanos, but they do reserve the right